Small Business Innovation Research/Small Business Tech Transfer

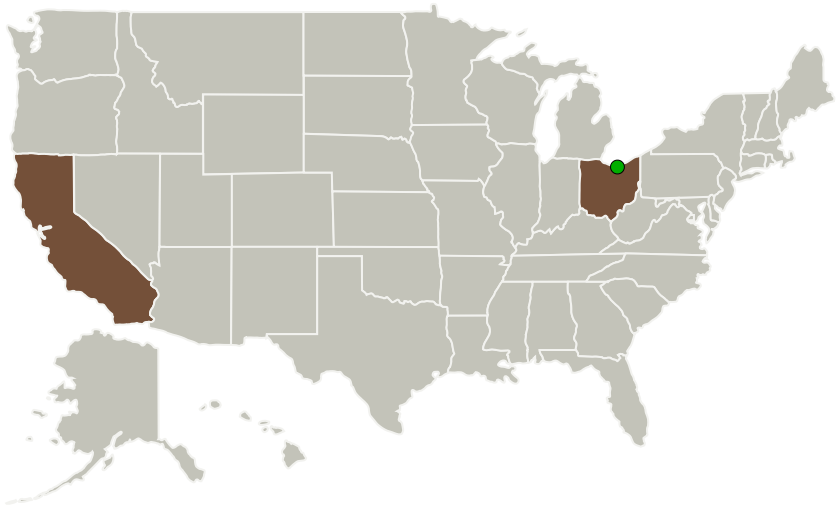
Regeneratively-Cooled, Turbopump-Fed, LOX/Methane Lunar Ascent Engines, Phase I

Completed Technology Project (2010 - 2010)

Project Introduction

To-date, the realization of small-scale, high-performance liquid bipropellant rocket engines for lunar and other planetary ascent vehicles has largely been limited by the inability to operate at high chamber pressures in a regeneratively-cooled environment using on-board pumps for pressurization of the propellants. Ventions seeks to fulfill this critical need by using a novel fabrication scheme to realize small-scale thrusters and turbopumps, and proposes to extend its previously-demonstrated technologies (under DARPA and NASA sponsored efforts) to develop a micro-scale turbopump for cryogenic propellants in a lunar ascent vehicle.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Ventions, LLC	Lead Organization	Industry	San Francisco, California
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
California	Ohio

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Project Transitions

January 2010: Project Start

July 2010: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140634)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Ventions, LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

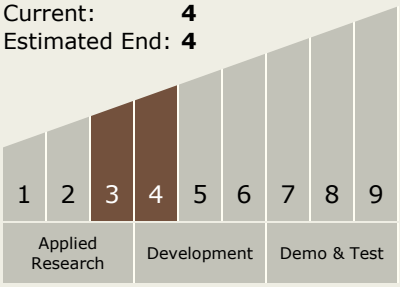
Carlos Torrez

Principal Investigator:

Adam London

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.1 Chemical Space Propulsion
    - TX01.1.3 Cryogenic

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System